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Analysis of KAAAP Through the 1998/1999 School Year

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by

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Introduction

This report summarizes and updates our annual evaluation of the KAAAP program. Our last report dated October 16, 1998 evaluated the KAAAP program for the school years 1991/92 to 1997/98. This report extends the analysis to include 1998/99 and is based on the data for the school year 1998/99. Each year's data include information about a new cohort and an update on the existing information for previous cohorts. We can conduct a more detailed analysis for the older cohorts because they have been in the program longer. In fact, the first cohort just graduated from high school at the end of the 1999/2000 academic year. The next analysis that we do will include that data, which may give us the first indication of KAAAP's impact on graduation rates.

A cohort is defined by the year in which the students chosen to participate in KAAAP or to be a control case finished (or would have finished) 4th grade. In the past years, we have analyzed the '92 cohort (that is, the class of 2000, mostly in 12th grade during the most recent school year), the '93 cohort (class of 2001, mostly 11th graders), '94 cohort (10th graders), '95 cohort (9th graders), '96 cohort (8th graders), '97 cohort (7th graders), and '98 cohort (6th graders). This year's analysis includes all the above cohorts and adds the '99 cohort (5th graders).

For each cohort, we perform two distinct types of analyses. The two types of analyses are as follows:

- Demographic comparability analyses
- Net impact analyses

In addition, because a sizeable share of the students in the earlier cohorts have turned 16, we have included analyses of high school dropout behavior. The purpose of the demographic comparability analyses is to determine if the characteristics (such as gender, age and particularly, socio-economic background) of the KAAAP and control students are comparable. A random procedure determines whether a student is selected into the KAAAP or the control group. However,

it is still likely, that by chance, one group will differ significantly from the other group. For instance, in one cohort, KAAAP selected a larger percentage of non-minorities; in another cohort KAAAP over-represented students whose mothers had a lower educational level; and in two cohorts, KAAAP students had higher third grade (pre-KAAAP) test scores. If the characteristics of the KAAAP students are different from the control group to begin with, we cannot necessarily attribute a difference in outcomes to KAAAP.

Besides, over the years, we expect both the KAAAP group of students and the control group of students to lose a few members. This process is referred to as experimental attrition, and the individuals who leave the sample are called attriters. While some students transfer out of the district; some of them voluntarily quit KAAAP; and the status of others are unknown. If there would be a great discrepancy between the KAAAP attriters from the control group attriters, then our analysis of outcomes may be skewed simply because of the composition of the sample and not because of KAAAP itself. We need to keep these non-comparabilities in mind as we follow the KAAAP and control students over time because they may help to explain differences in outcomes, that we would otherwise ascribe to KAAAP.

The net impact analyses have always been the central focus of our evaluation. We refer to the analyses as net, since we compare the KAAAP students to the control students. This comparison is based on our prediction that the outcomes for the control students reflect what would have happened to the KAAAP students, without KAAAP. We do not examine statistics such as test scores, dropout rates, or grade point averages for KAAAP students. Rather, we analyze the *differences between KAAAP students and control students* in test scores, dropout rates, or grade point averages. Since the students were randomly selected, KAAAP is the only difference between the two groups of students and so we conclude that it is responsible for the differences in outcomes.

In the net impact analyses, we focus on two types of outcomes: deportment and student achievement. We measure deportment by absences (primarily unexcused absences) and tardiness. We measure achievement by examining the Iowa Test of Basic Skills (given to all KPS elementary students in 91/92,92/93,93/94), the Metropolitan Achievement Test (given to all KPS elementary and middle school students in 94/95, 95/96, 96/97, 97/98, 98/99) and the MEAP (math and reading given to 4th and 7th graders every year). We have also been able to analyze grade point average since 1997/98, which was when the first cohort reached middle school.

We examine both the deportment and the achievement in two ways. One, we look at the differences in *levels*. Two, we look at the differences in *changes from year to year*. For example, an analysis of the difference in levels would examine test scores in 5th grade for the KAAAP and the control students. In this case, we are testing the hypothesis that KAAAP influences the achievement levels of 5th graders. On the other hand, an analysis of the difference in changes would examine the percentage change in test scores between 4th and 5th grade for KAAAP and control students. Here we are testing the hypothesis that KAAAP influences the amount of learning that occurs between 4th and 5th grade.

Demographic Comparability Analyses

We discussed in the previous section that a random procedure determines whether a student is in the KAAAP group or the control group. The exact selection procedure involves determining eligibility points for all students in third grade. Students above a certain cutoff point are considered eligible for KAAAP. From this eligible subset, students are assigned randomly to be in the KAAAP group or the control group. Since 1996, students have been selected for pre-KAAAP while they are in the 2nd or 3rd grade and the KAAAP students are drawn from this pool of pre-KAAAP students.

A comparison of the demographic characteristics of KAAAP students and control students in various cohorts shows the following statistically significant differences between the KAAAP students and the control students still in the sample:

Cohort	KAAAP students have higher levels of:	KAAAP students have lower levels of:
'92 cohort	4th grade MEAP math percentile Father's educational level	Percentage minority
'93 cohort	Above average birthweights Age	3rd grade percentile ITBS, total battery Percentage where English is home language
'94 cohort	No characteristics	No characteristics
'95 cohort	No characteristics	3rd grade percentile ITBS, language KAAAP eligibility points
'96 cohort	No characteristics	Mother's educational level Father's educational level
'97 cohort	No characteristics	Mother's educational level 3rd grade MAT7, reading percentile Percentage where English is home language
'98 cohort	No characteristics	No characteristics
'99 cohort	3rd grade MAT7 percentile, reading 3rd grade MAT7 percentile, total battery	No characteristics

The KAAAP students and control students in the '94 and '98 cohort appear to be statistically indistinguishable. However, the '95 cohort (8th graders during the last school year), the '96 cohort (7th graders) and the '97 cohort (6th graders), all have disproportionate levels of some characteristics that we think are indicators of disadvantage. On the other hand, the KAAAP students in the '92 cohort (11th graders) and the '99 cohort (5th graders) are more advantaged than the control students.

In general, there are not a large number of characteristics that differ for each cohort, because these distinctions occur simply through the luck of the draw and through the mobility choices of families.

Net Impact Analyses

The net impact analyses examine primarily the test scores and deportment measures. We compare these outcomes for the KAAAP and the control group by studying i) the levels and ii) the changes over time of test scores and deportment measures. The graphs in the appendix reflect the trends in the outcomes that we are examining here. When we look at the graphs, we frequently see differences between the KAAAP students and the control students—sometimes one group is "better" and sometimes the other group is "better." The statistical test that we perform is to see whether the differences could happen by chance. We say that a difference is statistically significant if there is less than 10 percent probability that this large a difference could have occurred by chance.

The following table shows the statistically significant positive or negative outcomes through the end of the 1998/99 school year. We report here only a small percentage of the several outcomes that we examined.

Cohort	Positive Net Impacts	Negative Net Impacts
'92 cohort	4th to 5th grade change in ITBS percentile, language	4th grade unexcused absences 7th grade unexcused absences 6th to 7th grade changes in unexcused absences 8th grade GPA 10th to 11th grade change in total absences 11th grade total absences

Cohort	Positive Net Impacts	Negative Net Impacts
'93 cohort	3rd to 4th grade change in tardies 5th grade unexcused absences 8th grade tardiness 9th grade tardiness	4th grade percentile ITBS, reading 4th grade percentile ITBS, total battery 4th grade MEAP, math percentile
'94 cohort	4th grade ITBS percentile, math 4th to 5th grade change in total absences 5th grade unexcused absences 5th grade total absences 5th grade MAT7, math 6th grade tardiness 6th grade unexcused absences 6th grade total absences 6th to 7th grade change in MAT7 percentile, math 7th grade total absences 7th grade MAT7, math 8th grade total absences 8th grade tardiness 8th grade MAT7 math	7th to 8th grade change in unexcused absences 8th to 9th grade change in tardiness
'95 cohort	5th grade tardiness 6th grade tardiness	4th grade percentile MAT7, total battery 4th grade MEAP, # math correct 6th to 7th grade change in tardiness
'96 cohort	4th grade MEAP, reading scaled score: story 4th to 5th grade change in percentile MAT7, total battery 6th to 7th grade change in MAT7 percentile, reading	5th to 6th grade change in MAT7 percentile, reading 5th to 6th grade change in MAT7 percentile, total battery
'97 cohort	3rd to 4th grade change in MAT7, total battery	none
'98 cohort	3rd to 4th grade change in MAT7 percentile, Math 4th grade tardiness 4th grade MAT7 percentile, math	4th to 5th grade change in total absences
'99 cohort	None	None

We examined many different outcomes, so the above list is only a small percentage of the total possible positive (or negative) outcomes. The earlier cohorts have more net outcomes to examine because they have been in the program longer.

For all the cohorts when there is a significant difference in the deportment levels, it tends to be positive for KAAAP students. But if we look at the difference in change in deportment levels from one grade to the next, it tends to be negative for KAAAP students. However, if we consider the 1995 cohort, the KAAAP students witnessed an increase in tardiness between 6th and 7th grade while the Control students witnessed a decline in their tardiness between 7th and 8th grade, yet the KAAAP 8th graders have a lower level of tardiness than 8th grade control students.

We do not observe a strong positive or negative trend in the test outcomes for the KAAAP students. But we can say that the negative test score outcomes tend to be in the 4th or 5th grade, perhaps before KAAAP started to have an effect. In the later grades, the KAAAP students seem to be performing at par with the control students or doing better than the control students. The 1994 cohort definitely stands out as being the best KAAAP group so far. The KAAAP group of the 1996 cohort, on the other hand, suffered a negative test outcome between the 5th and 6th grade. Their test outcomes did not really recover between the 6th and 7th grade but the score for the control group plunged down even more, so the two groups seem to be converging to the same level at the end of the 7th grade. Looking at the overall results for the two groups, it appears as though there are a few more positive net impact outcomes for KAAAP students than negative net outcomes.

Dropout Rates

Our last report provided a look at dropout rates for the first time in any of our analyses. This report examines dropout rates again, using an additional year of data. It is somewhat difficult to

analyze dropout rates, however, because students who drop out do not report their status to the school system. So the automated data from KPS does not explicitly identify students who drop out. The best that we can do is to look at the sample of KAAAP and control students, and compare the number of cases where data exist for a student in one year, but not for the consecutive year. Of course, the students could either have moved out of the school district or dropped out. However, the reduction in sample sizes from year-to-year is our best source for making any inferences regarding student dropout rates.

Michigan imposes compulsory school attendance through age 16. Anecdotal data suggest that most students drop out when they turn 16, which is usually in grades 10 or 11. To get a picture of the number of dropouts, the following table presents the sample sizes of the '92, '93 and '94 cohorts (since these cohorts are the only ones that have students, 16 years and older) at the end of school years '95/'96, '96/'97, '97/'98 and '98/'99.

		'95/'96	'96/'97	'97/'98	'98/'99
'92 Cohort		8th graders	9th graders	10th graders	11th graders
	KAAAP	65	57	46	43
	Control	76	71	53	46
'93 Cohort		7th graders	8th graders	9th graders	10th graders
	KAAAP	65	60	54	49
	Control	68	66	59	52
'94 Cohort		6th graders	7th graders	8th graders	9th graders
	KAAAP	52	51	51	49
	Control	62	58	53	53

For most cohorts, the sample size drops by 10 percent or less from one year to the next. This is true for the '92 , '93, and '94 cohorts even in the school years when some, but not most, of the students turn 16 (that is, '96/'97 for the '92 cohort, '97/98 for the '93 cohort and '98/'99 for the '94

cohort). However, for the '92 cohort, in '97/98 (when most of the students turned 16) the attrition was 19 percent (57 to 46) for the KAAAP students and 25 percent (71 to 53) for the control students. For the '93 cohort, in '98/'99 (when most of the students turned 16), the attrition rate was 9 percent (54 to 49) for the KAAAP students and 12 percent (59 to 52) for the control students. While these are not huge differences, it should be noted that the attrition rates (which we believe to be proxying for dropout rates) are higher for the control groups in both years.

In order to observe sample attrition for students during and after the year they turned 16, we combine the three cohorts in the following table:

	Age 15 in '98	Age 16 in '99	15+ in '98	16+ in '99
KAAAP	47	45	92	85
Control	56	51	98	85

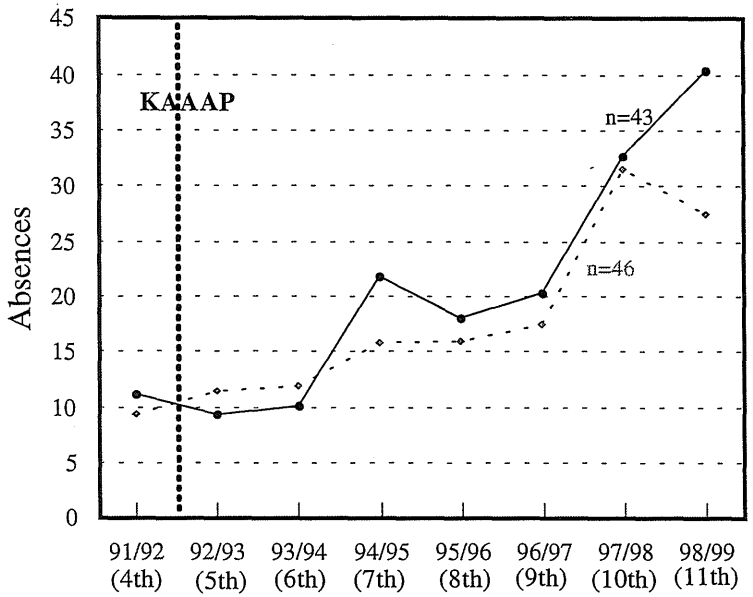
During the year that students turned 16, the attrition is 4 percent (47 to 45) for the KAAAP students and 9 percent (56 to 51) for the control students. This differential in the attrition rate seems to go up when we look at attrition during and after the year the students turned 16. For KAAAP, it goes up to 8 percent (92 to 85) and for the control students it increases to 13 percent (98 to 85). The data seem to consistently suggest that the rate at which KAAAP students drop out of high school during and after they turn 16 compares favorably to the dropout rate for control students.

Conclusion

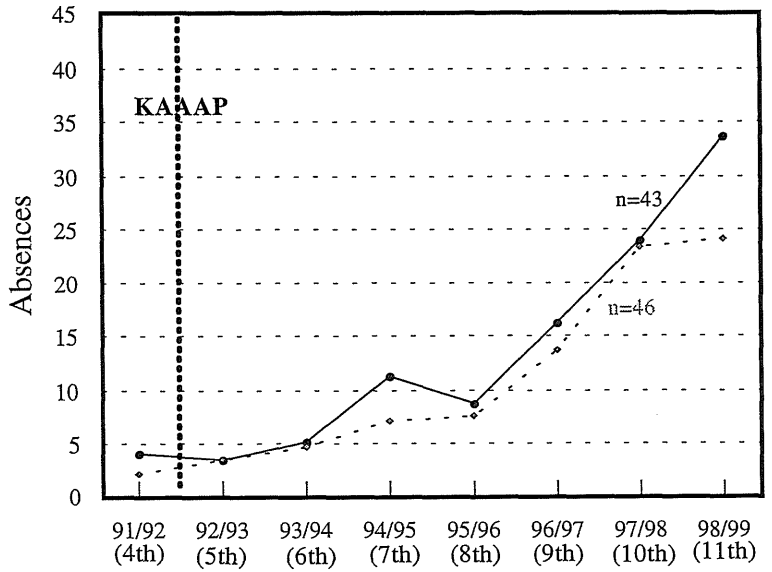
The data suggest that KAAAP has a small, positive impact on school deportment and achievement outcomes of students, and the data are consistent with a small reduction in dropout rates.

1992 Cohort Outcomes

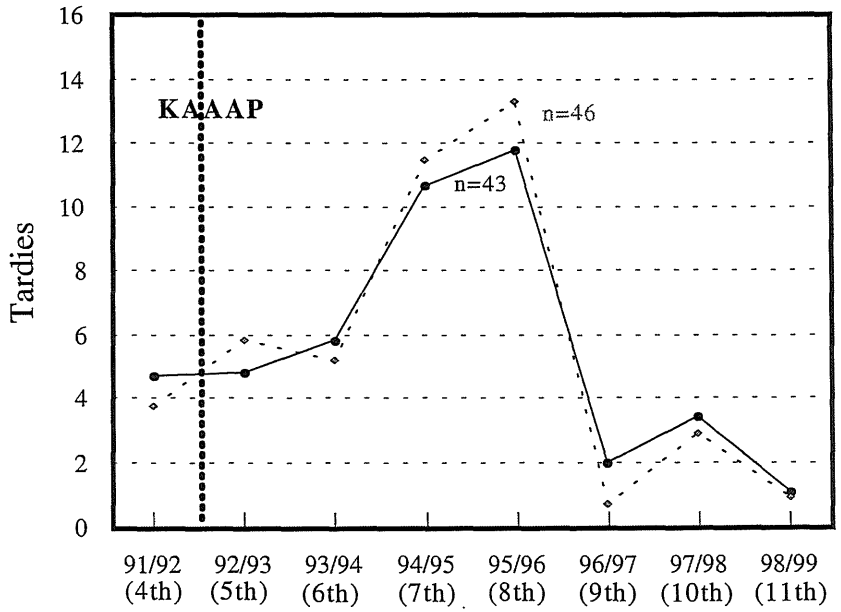
Average Number of Total Absences

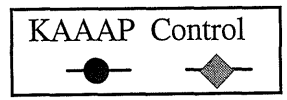


Average Number of Unexcused Absences



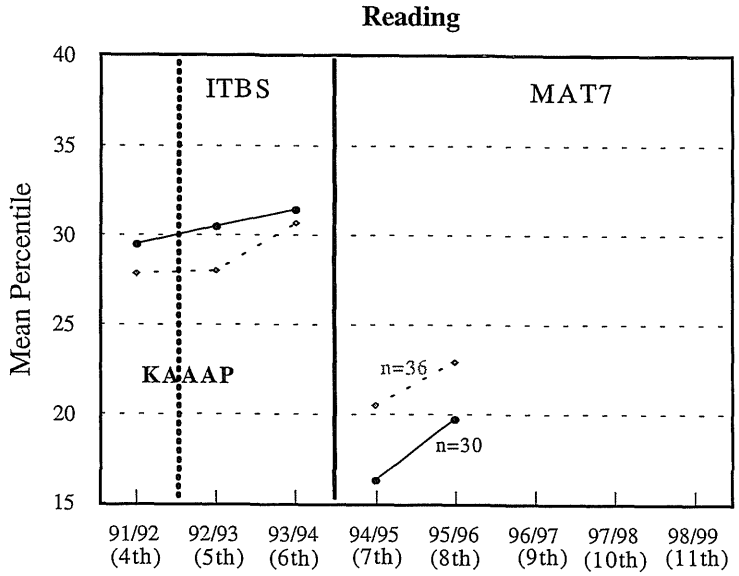
Average Number of Tardies

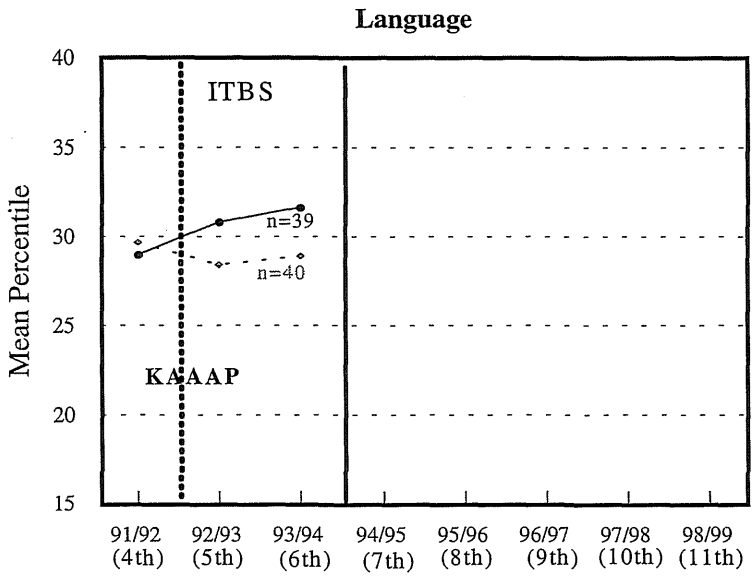


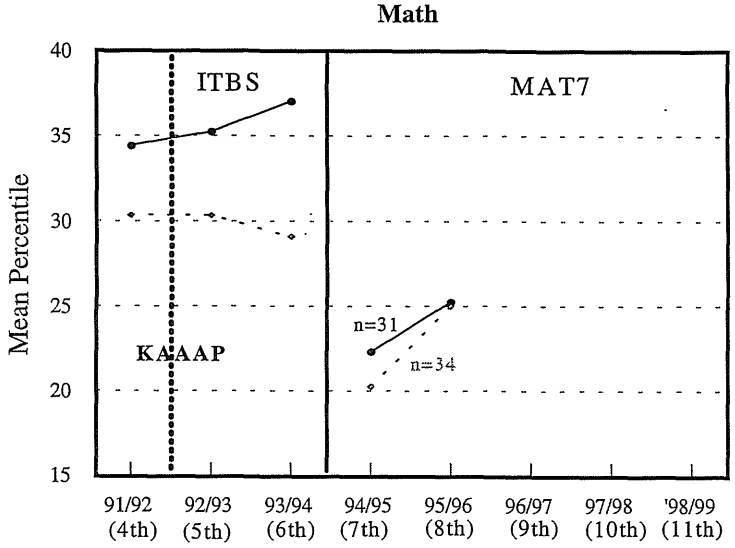


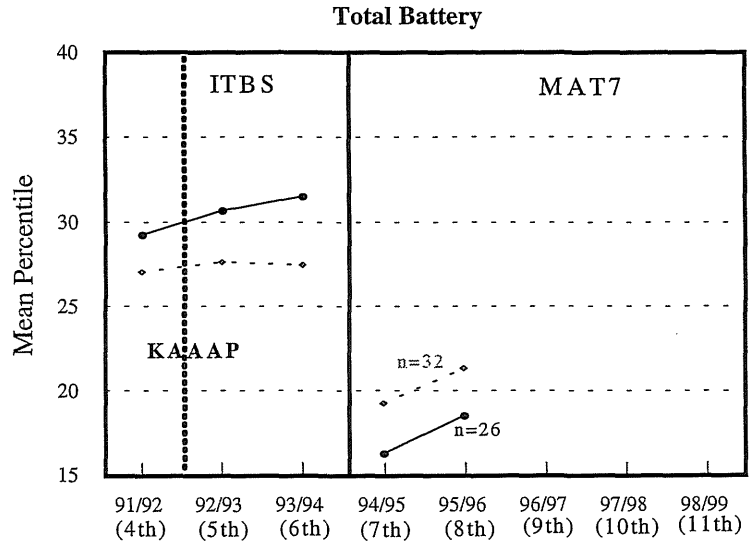
1992 Cohort Outcomes

Standardized Test Results





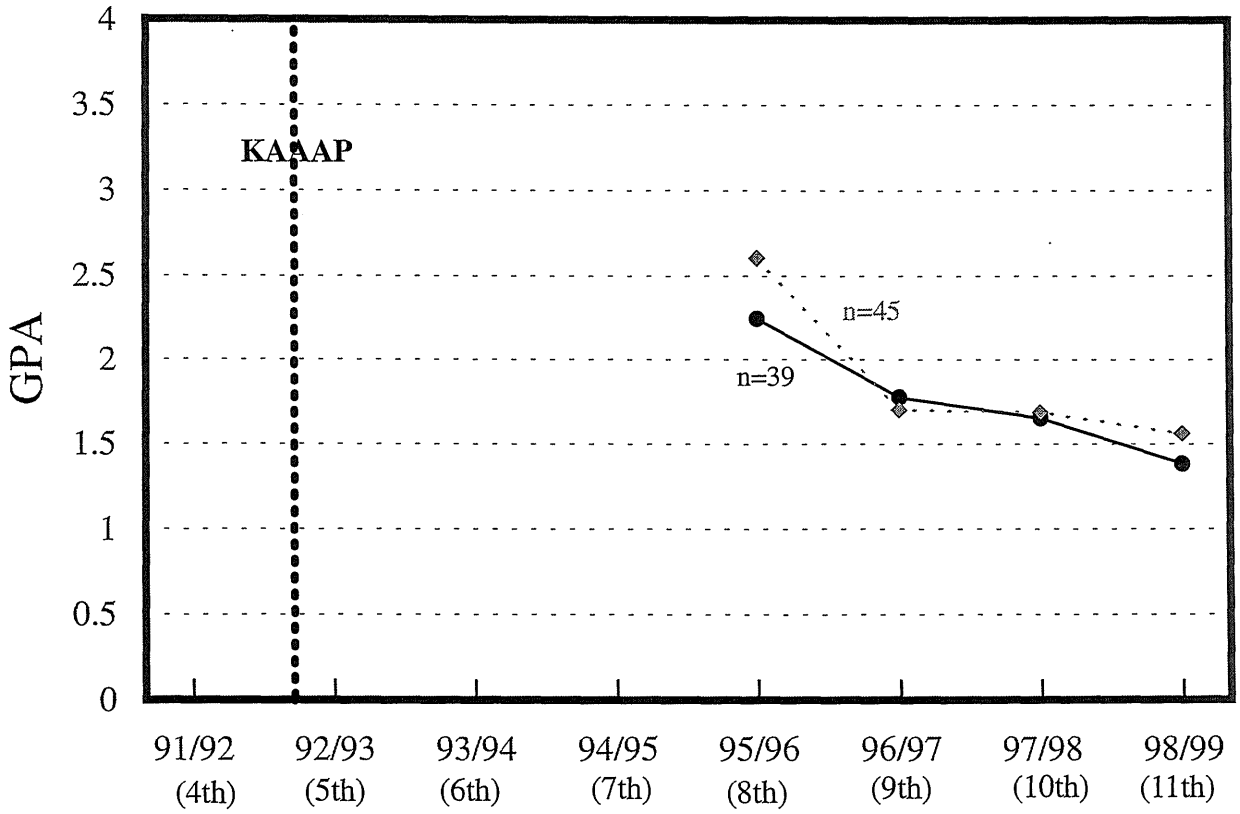


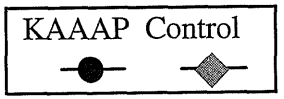


Note: Left portion is ITBS and right portion is MAT7.
MAT7 does not have a language component.

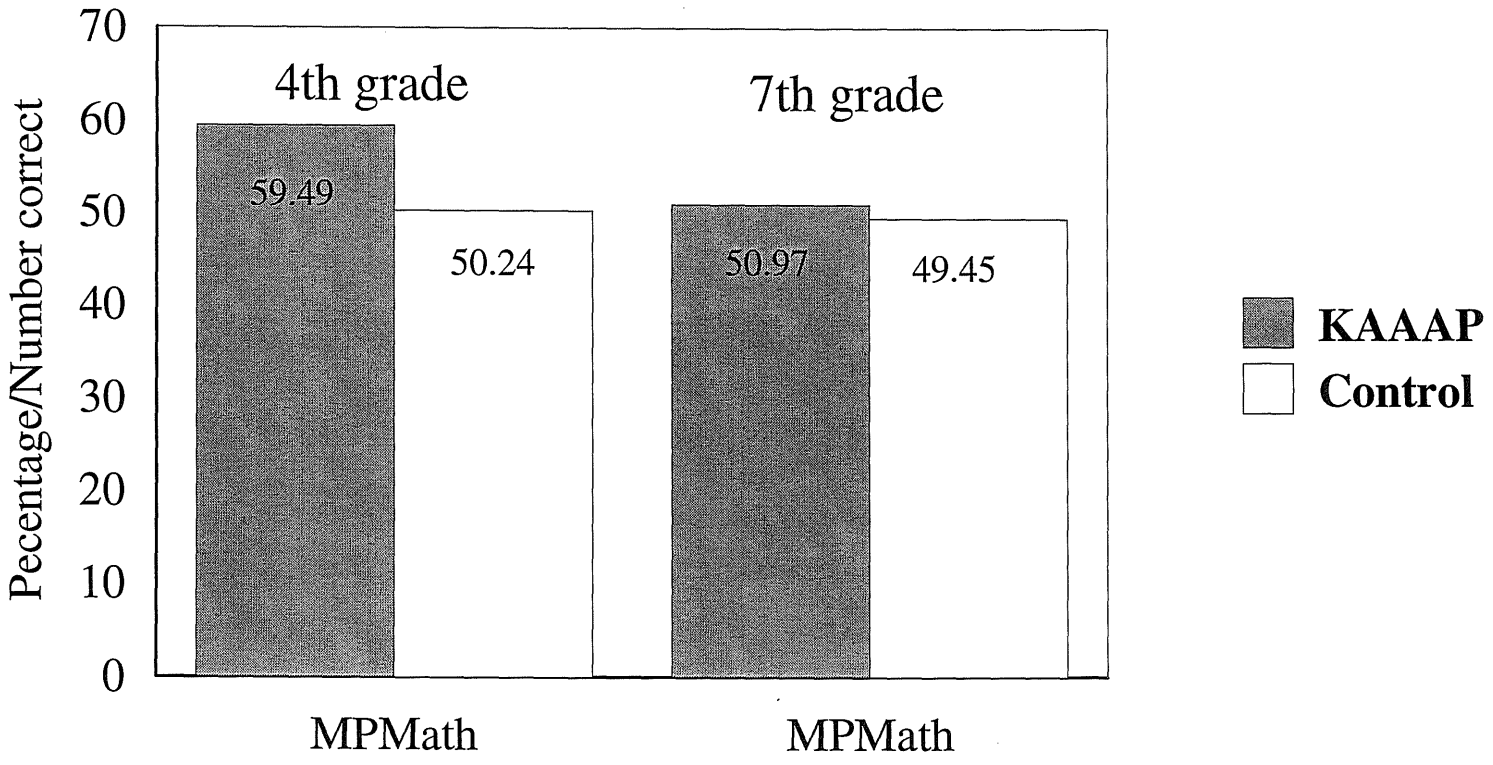
KAAAP Control

1992 Cohort Outcomes
GPA



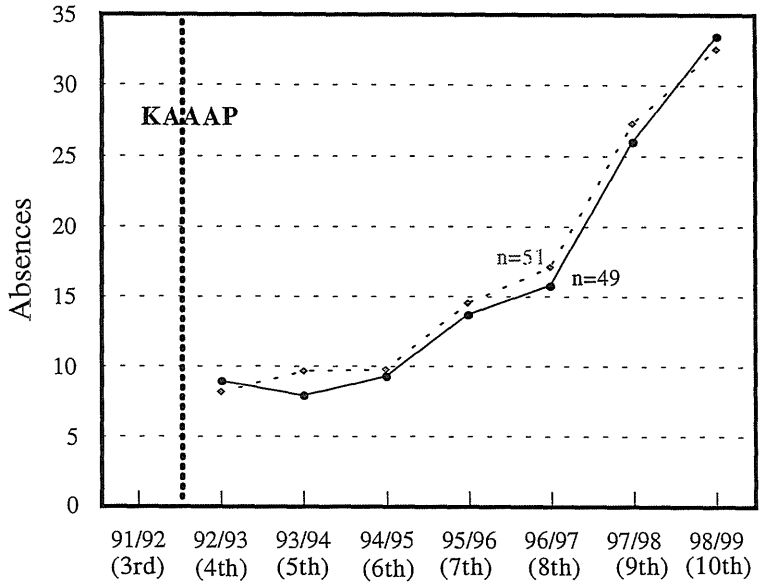


1992 Cohort
MEAP Scores

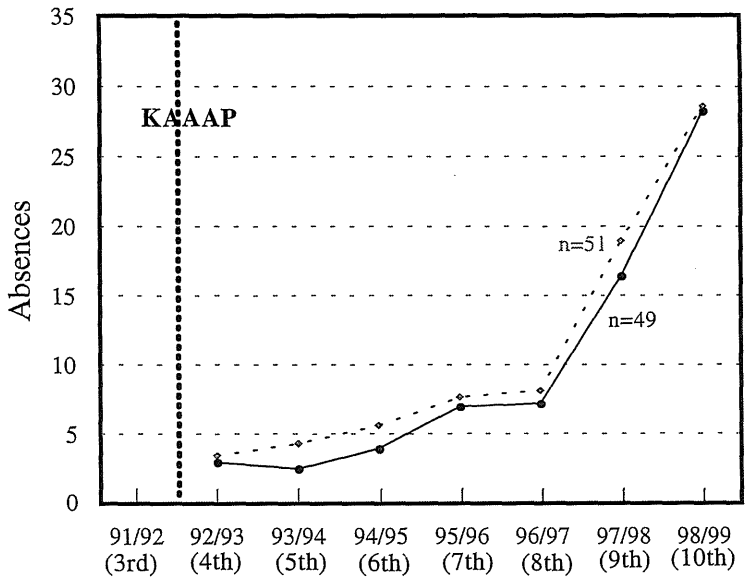


1993 Cohort Outcomes

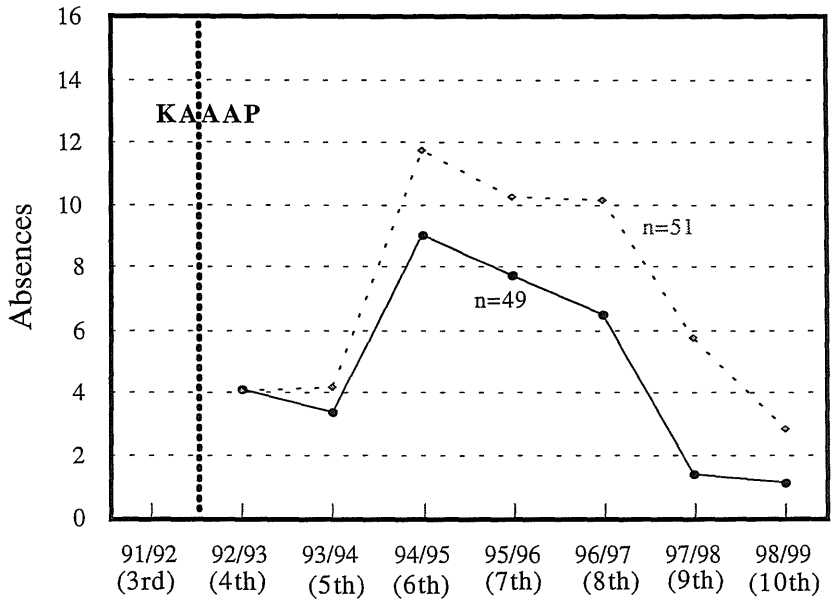
Average Number of Total Absences

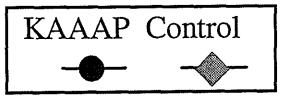


Average Number of Unexcused Absences



Average Number of Tardies

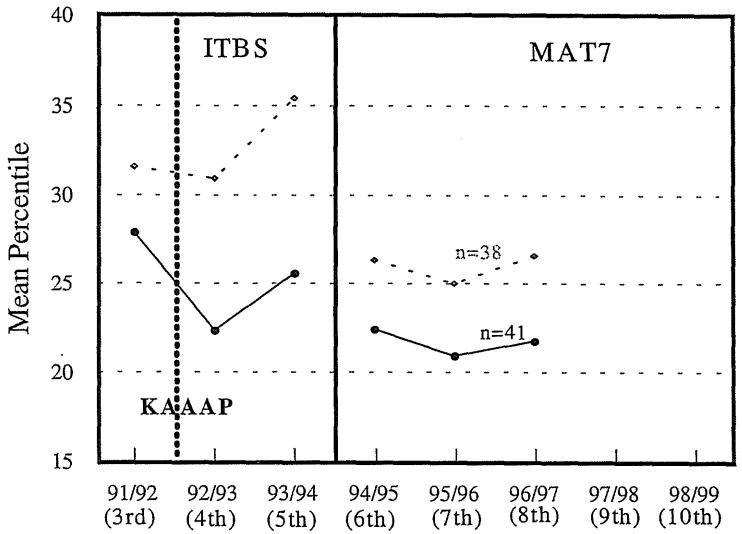




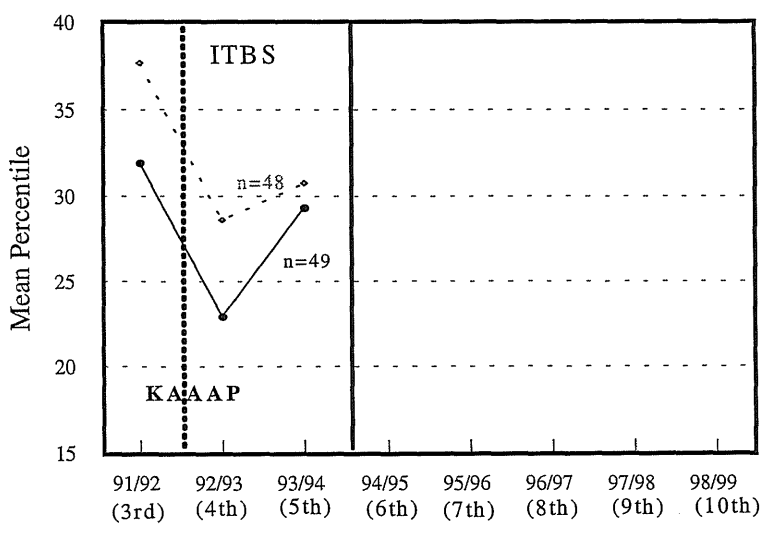
1993 Cohort Outcomes

Standardized Test Results

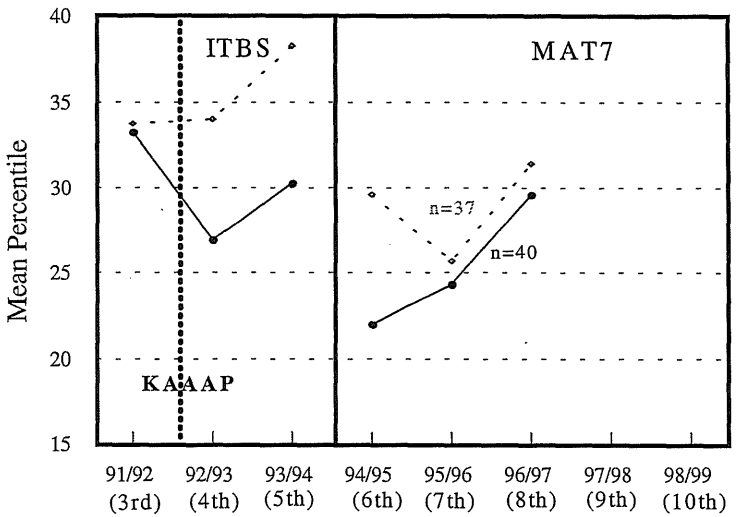
Reading



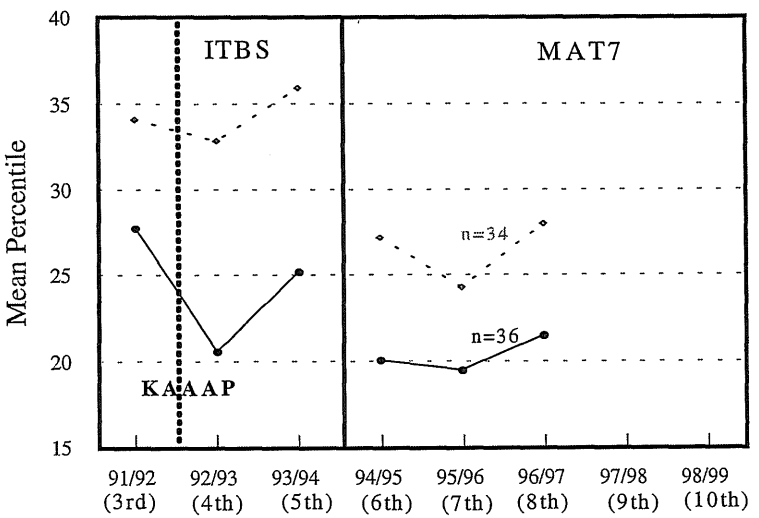
Language



Math



Total Battery

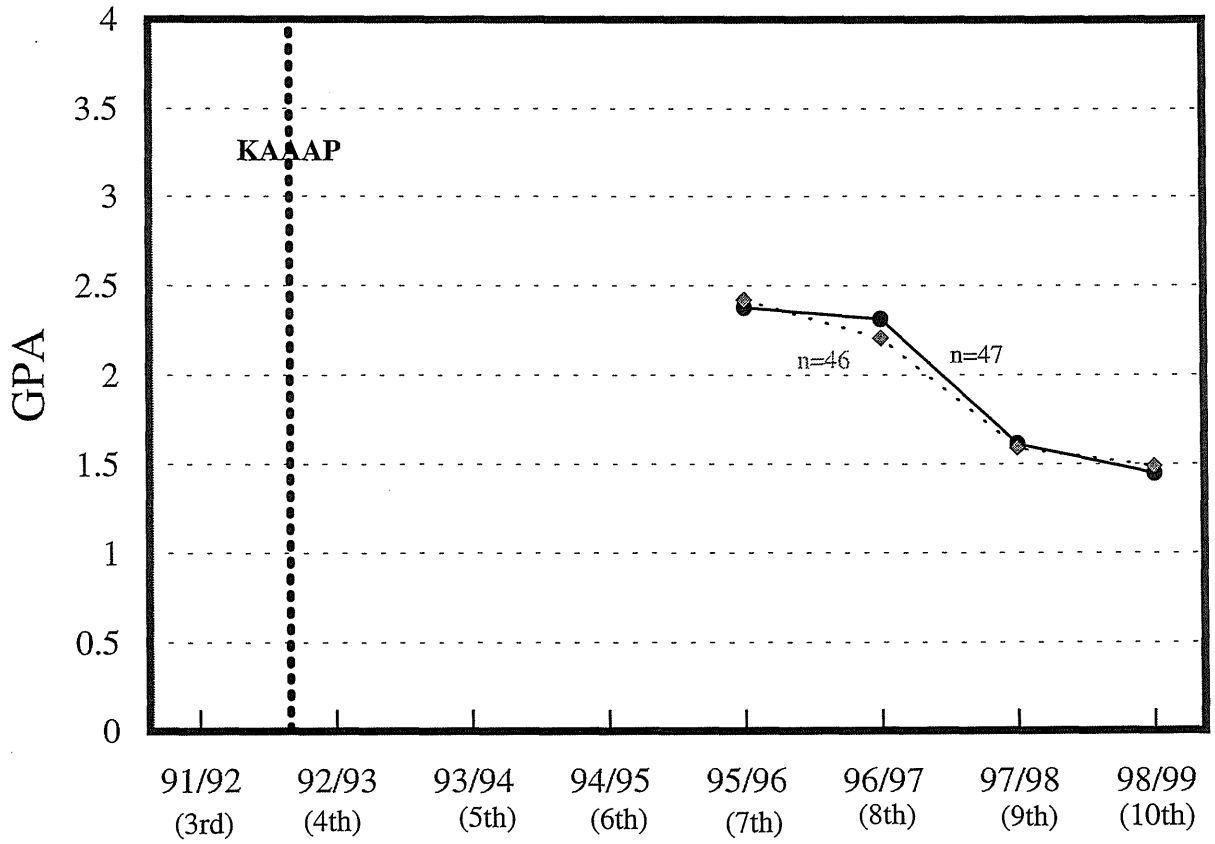


Note: Left portion is ITBS and right portion is MAT7.
MAT7 does not have a language component.

KAAAP Control

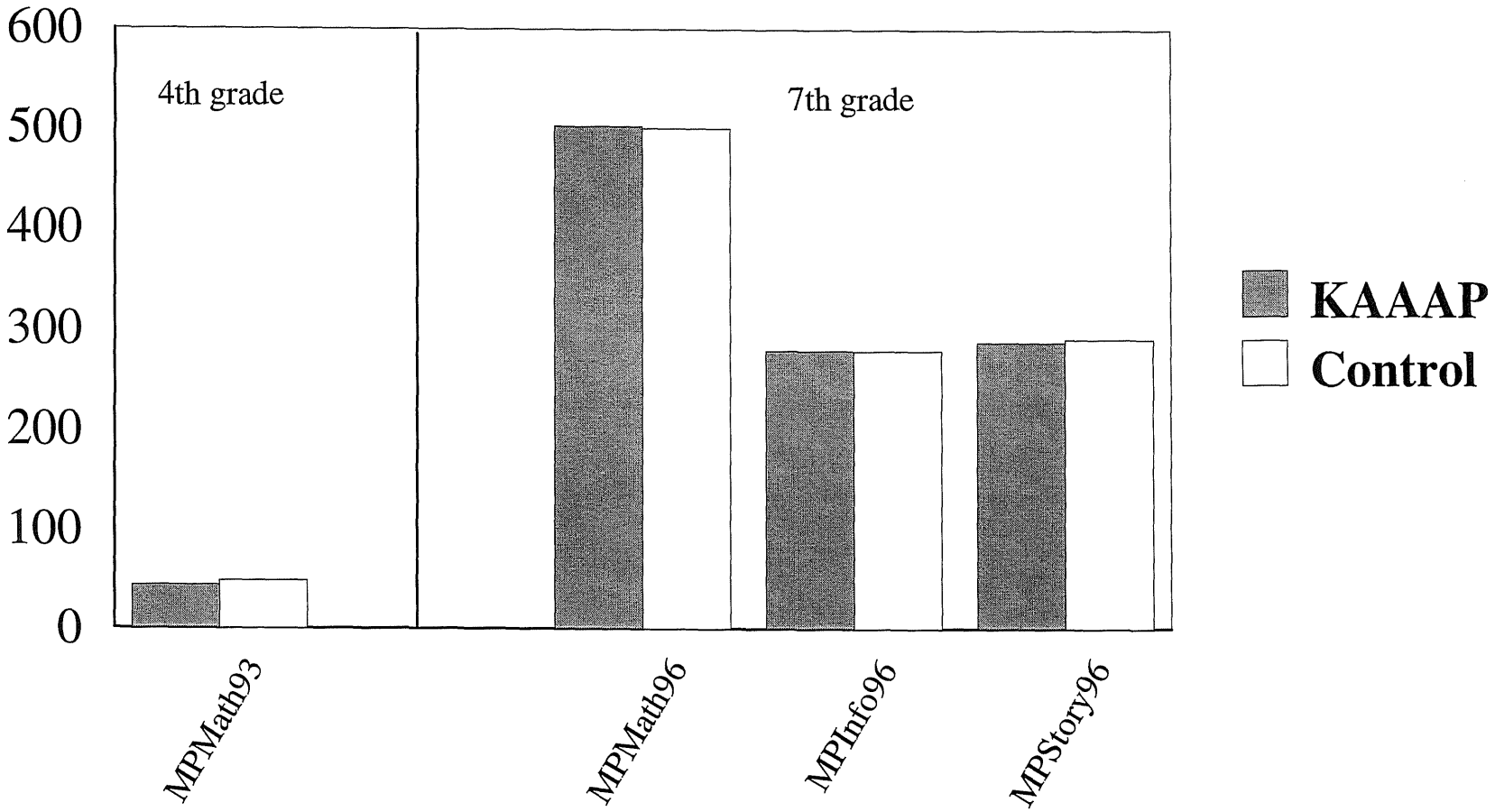
1993 Cohort Outcomes

GPA



KAAAP Control

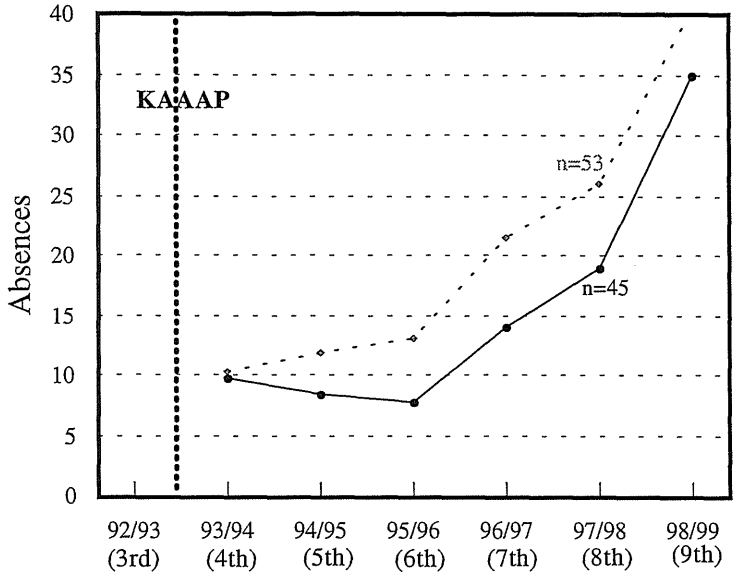
1993 Cohort
MEAP Scores



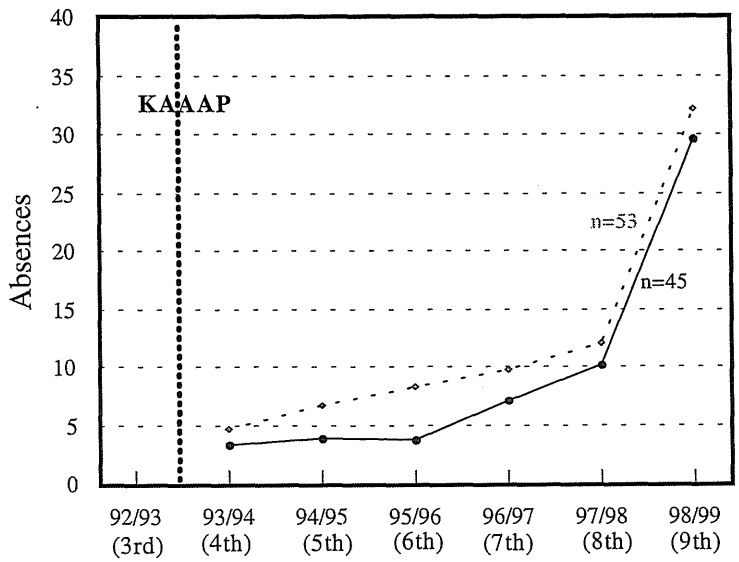
Note: The MEAP score in 1993 is a percentile score. In the other years the MEAP score represents a scaled score.

1994 Cohort Outcomes

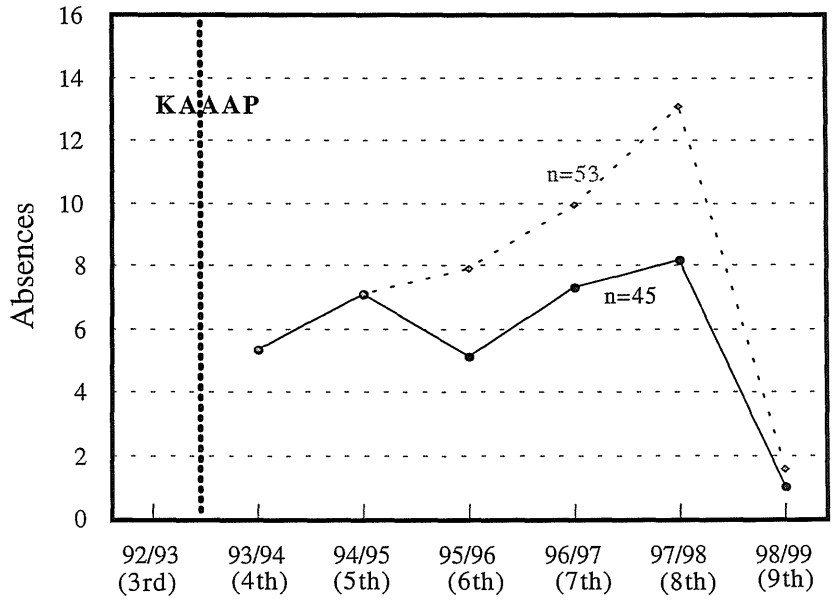
Average Number of Total Absences



Average Number of Unexcused Absences



Average Number of Tardies

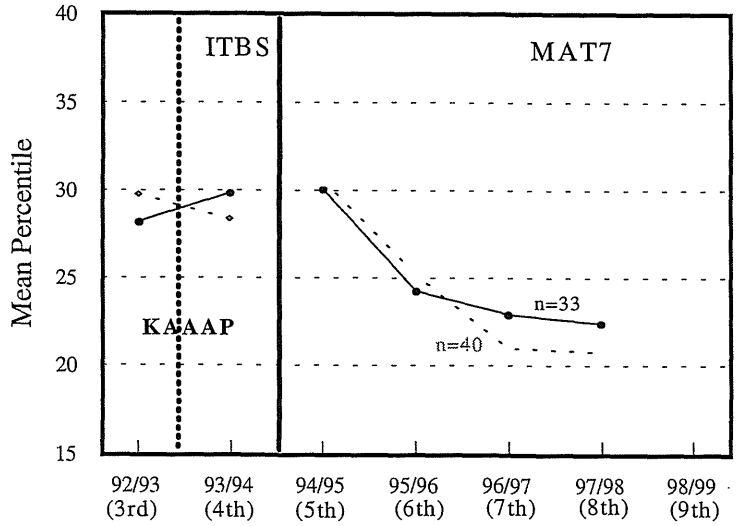


KAAAP Control

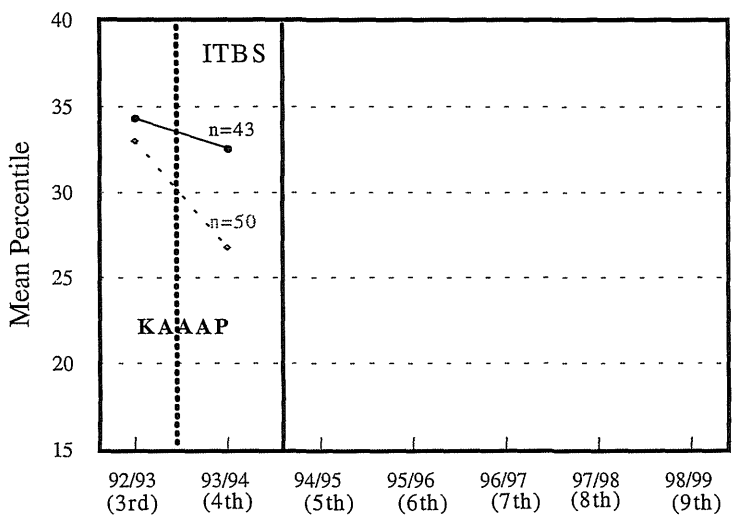
1994 Cohort Outcomes

Standardized Test Results

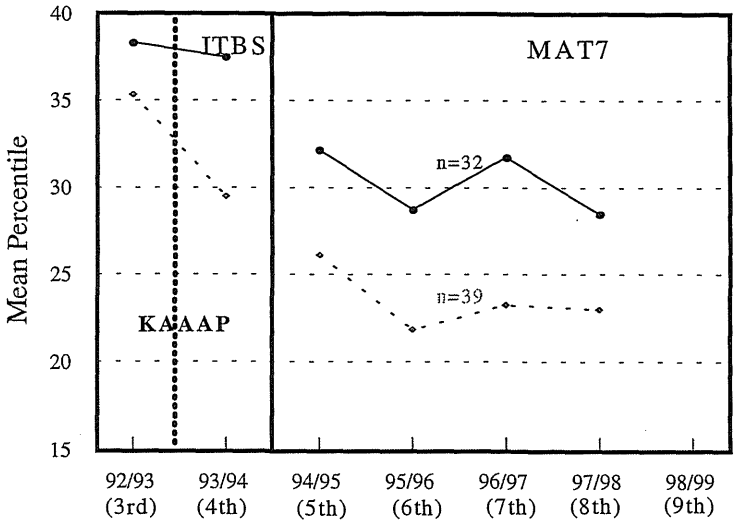
Reading



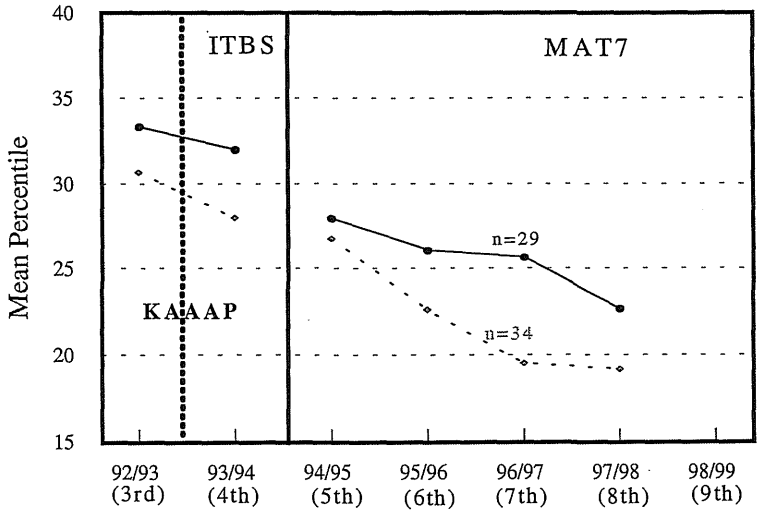
Language



Math



Total Battery

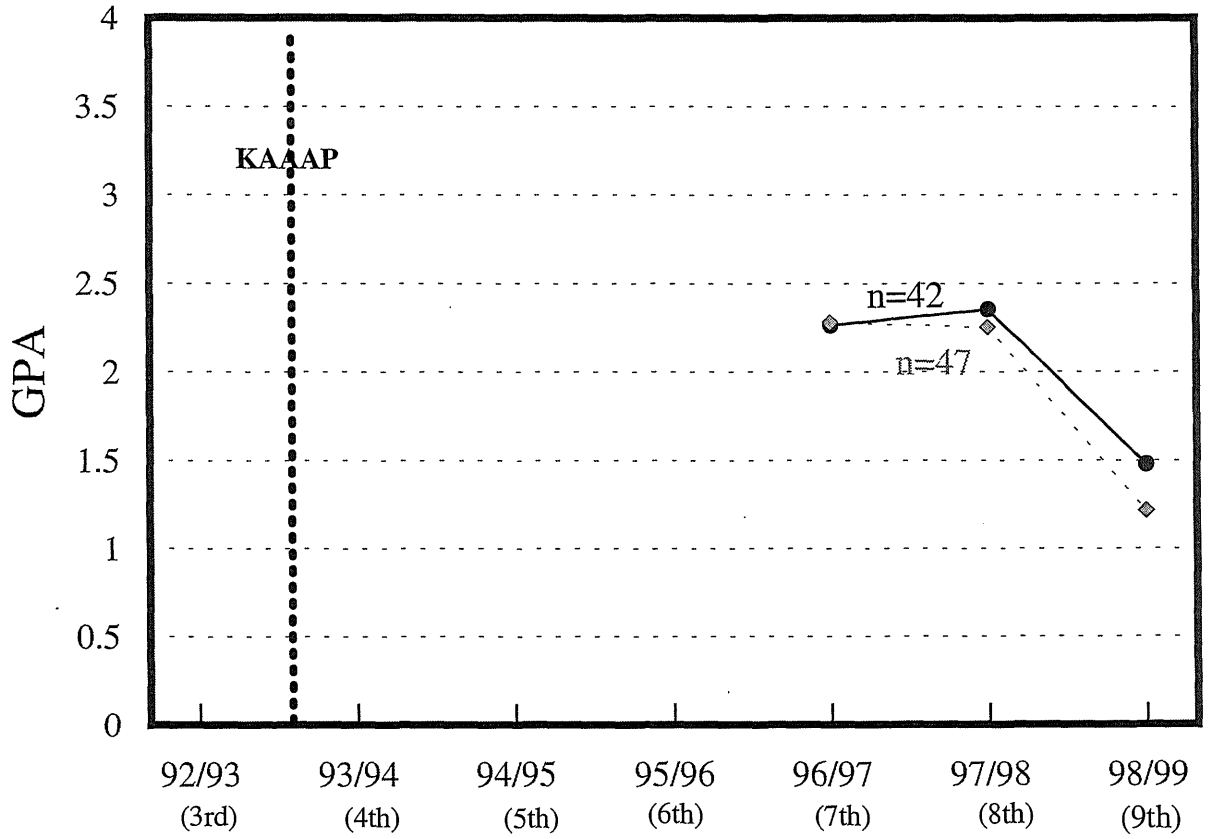


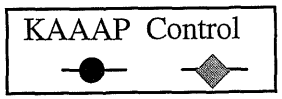
Note: Left portion is ITBS and right portion is MAT7.
MAT7 does not have a language component.

KAAAP Control

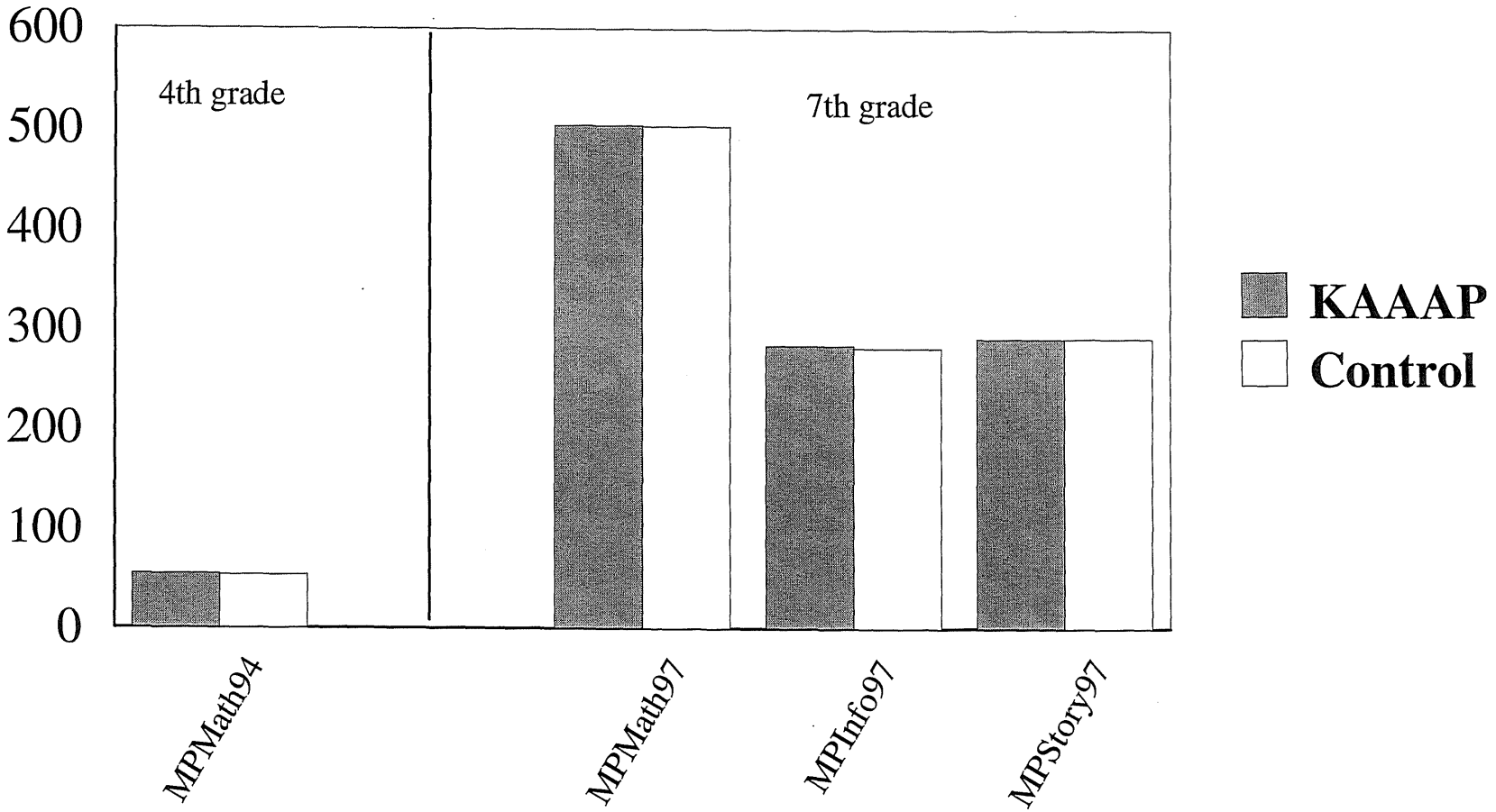
1994 Cohort Outcomes

GPA





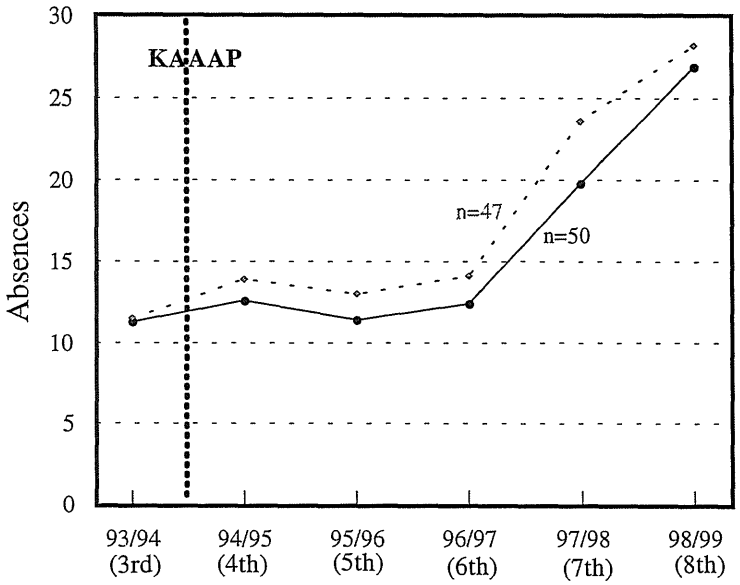
1994 Cohort
MEAP Scores



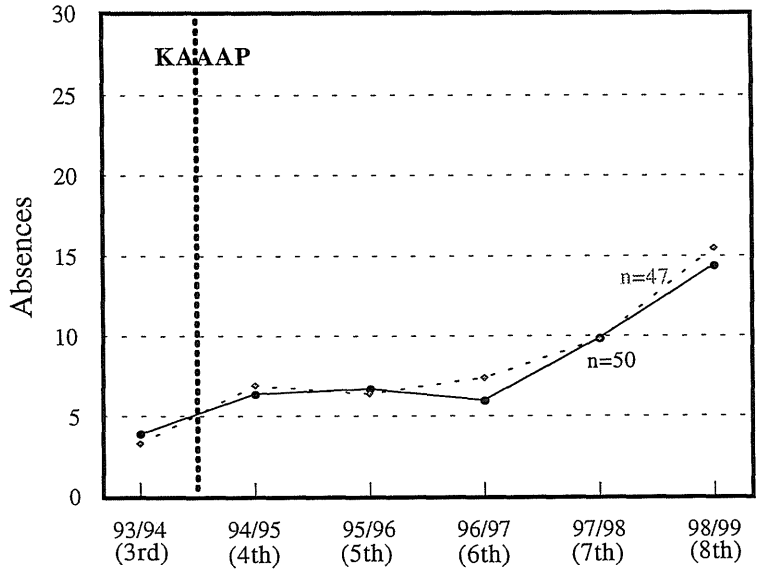
Note: The MEAP score in 1994 is a percentile score. The MEAP score in 1997 represents a scaled score.

1995 Cohort Outcomes

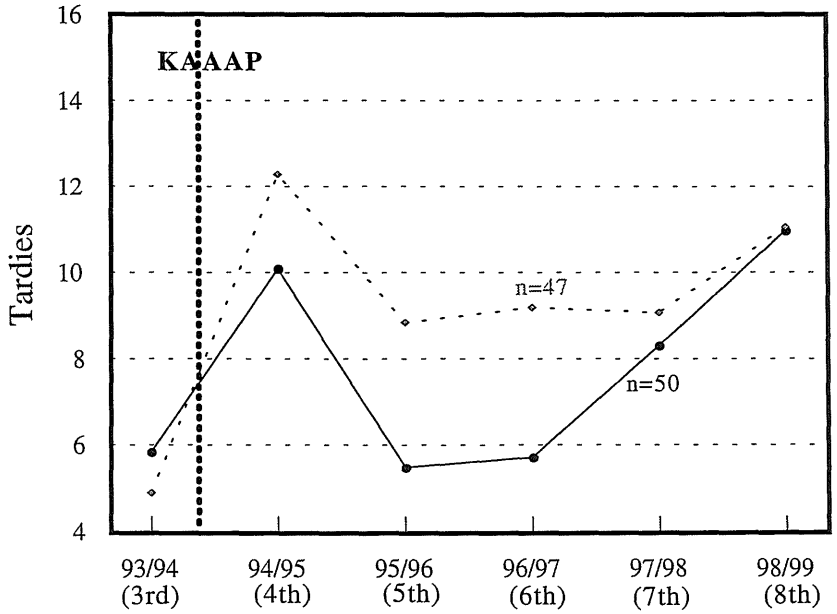
Average Number of Total Absences

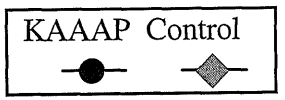


Average Number of Unexcused Absences



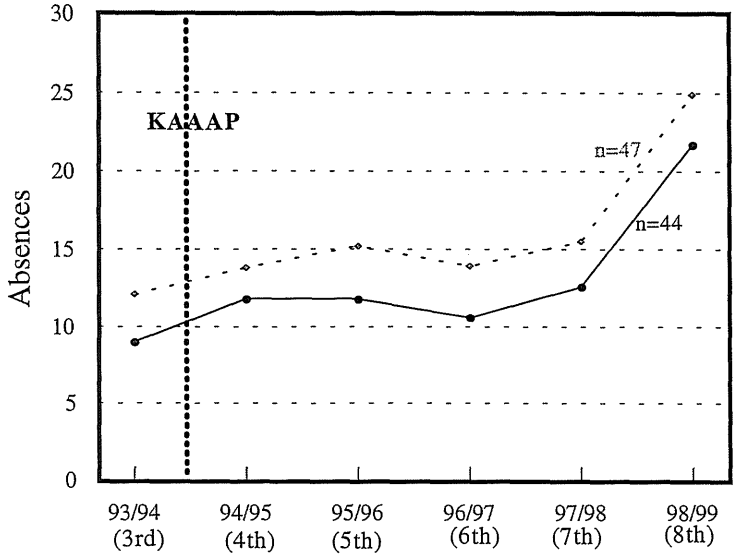
Average Number of Tardies



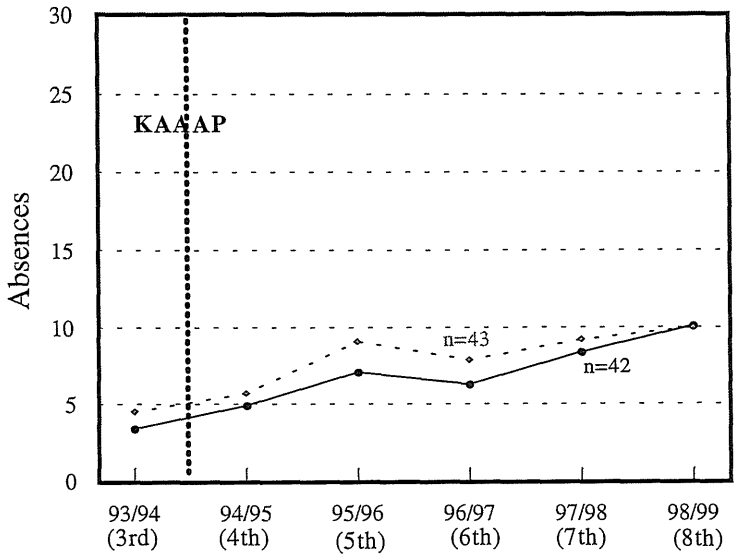


1996 Cohort Outcomes

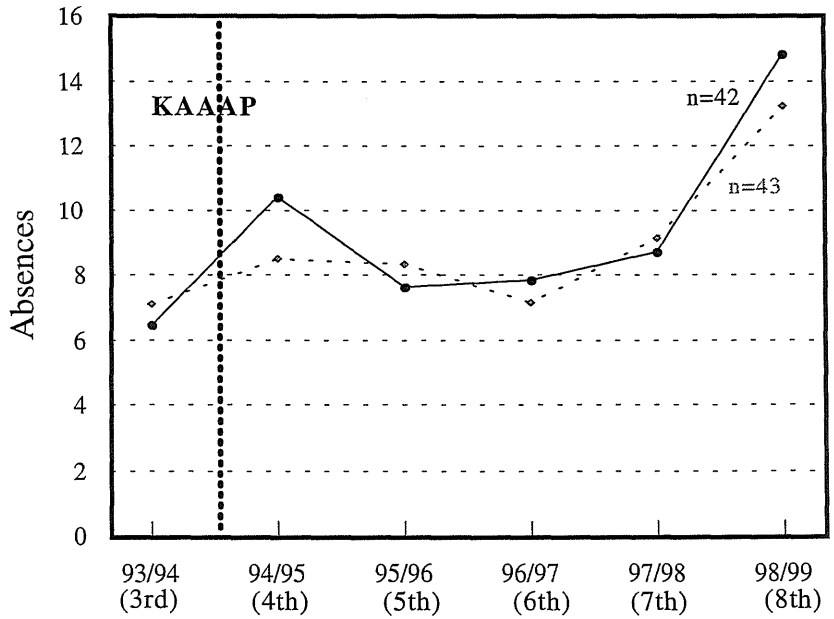
Average Number of Total Absences



Average Number of Unexcused Absences



Average Number of Tardies

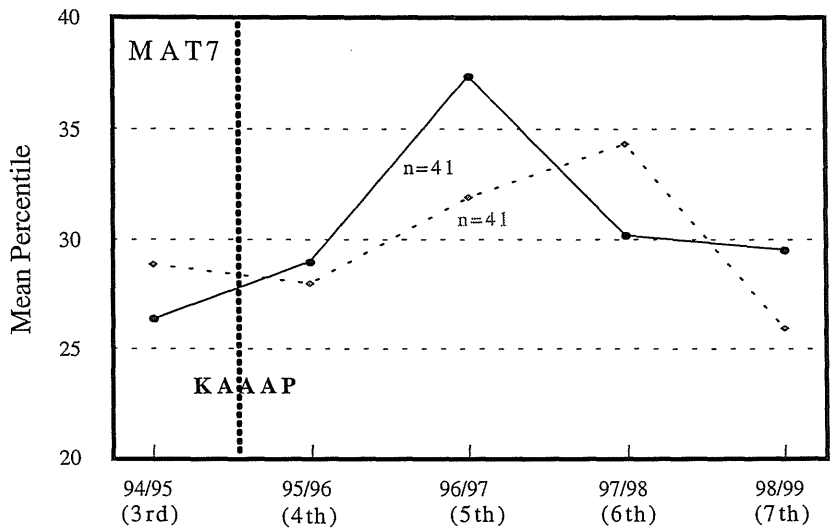


KAAAP Control

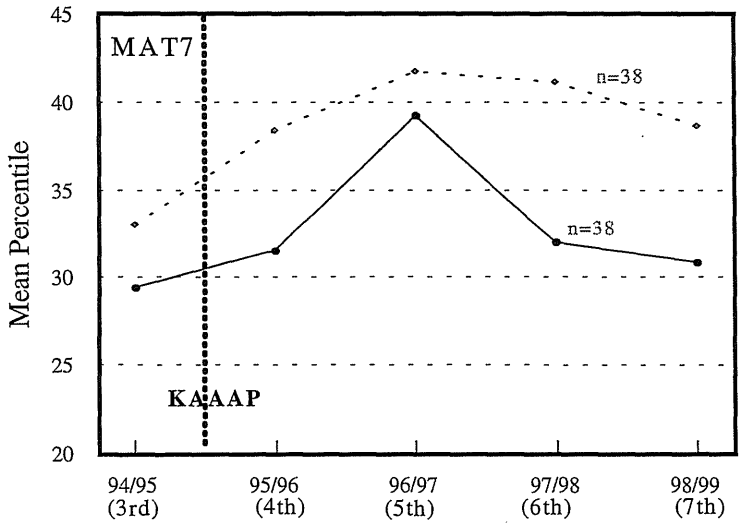
1996 Cohort Outcomes

Standardized Test Results

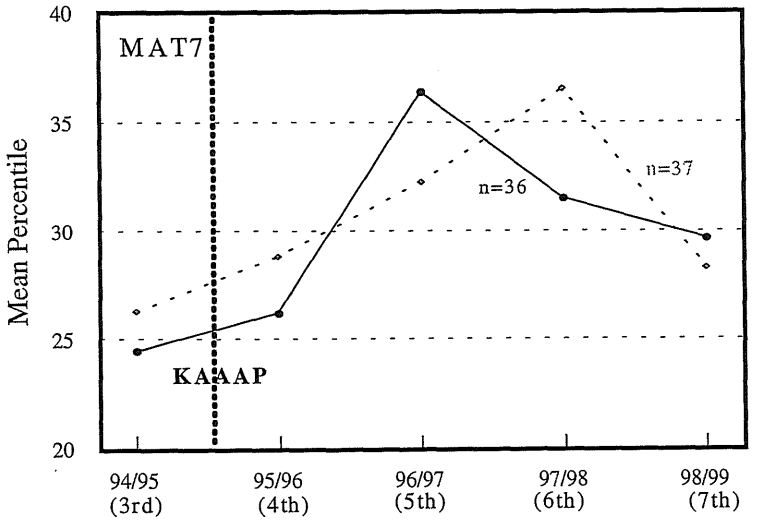
Reading



Math



Total Battery

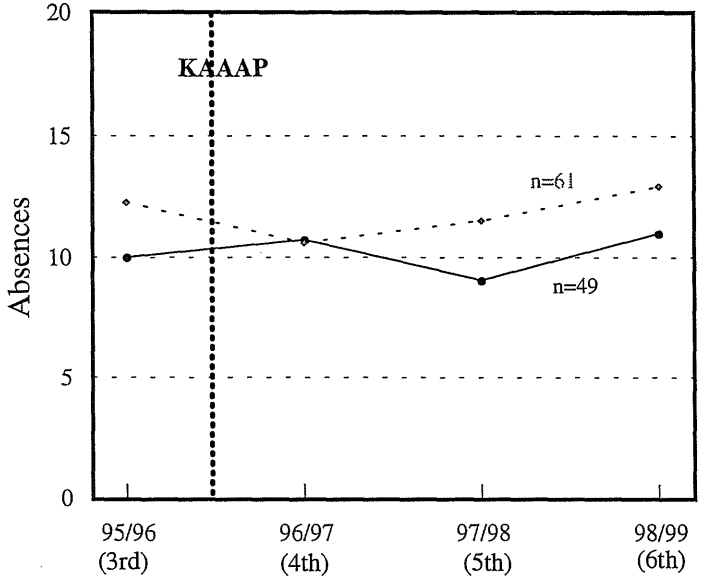


Note: Left portion is ITBS and right portion is MAT7.
MAT7 does not have a language component.

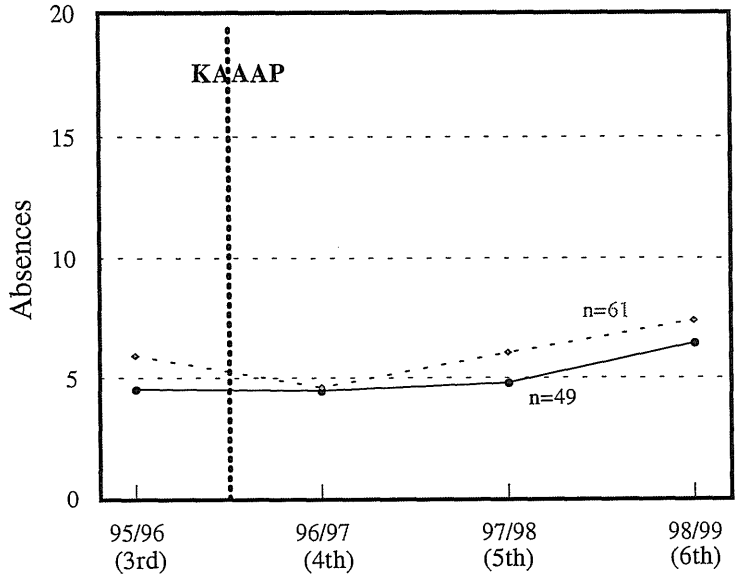
KAAAP Control

1997 Cohort Outcomes

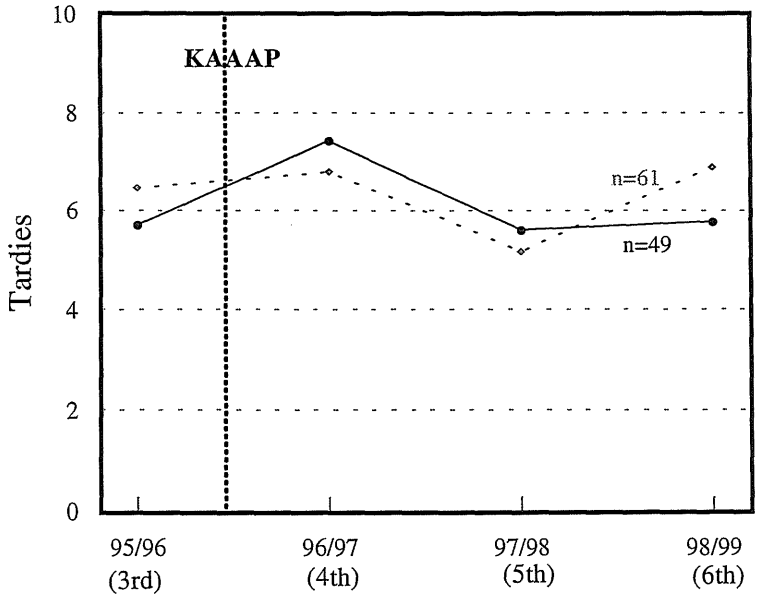
Average Number of Total Absences



Average Number of Unexcused Absences



Average Number of Tardies

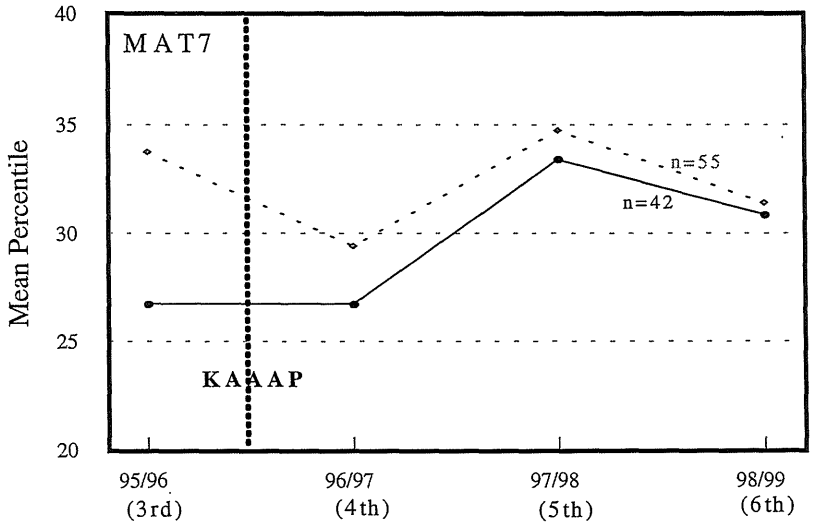


KAAAP Control

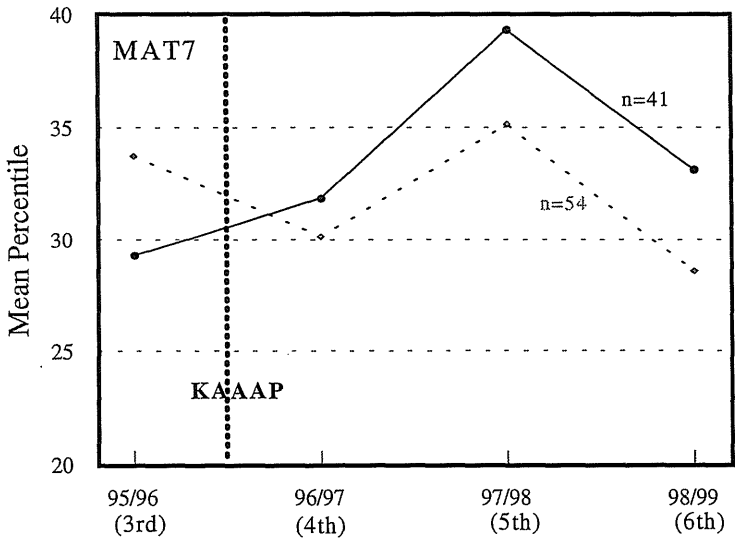
1997 Cohort Outcomes

Standardized Test Results

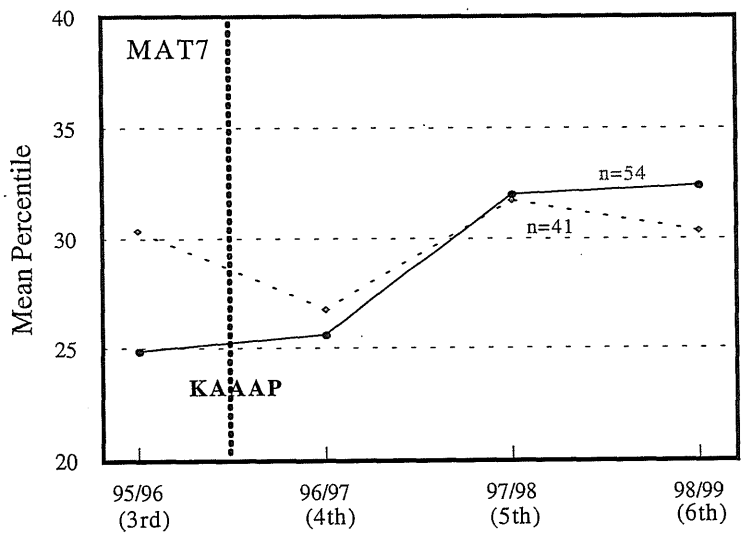
Reading



Math



Total Battery

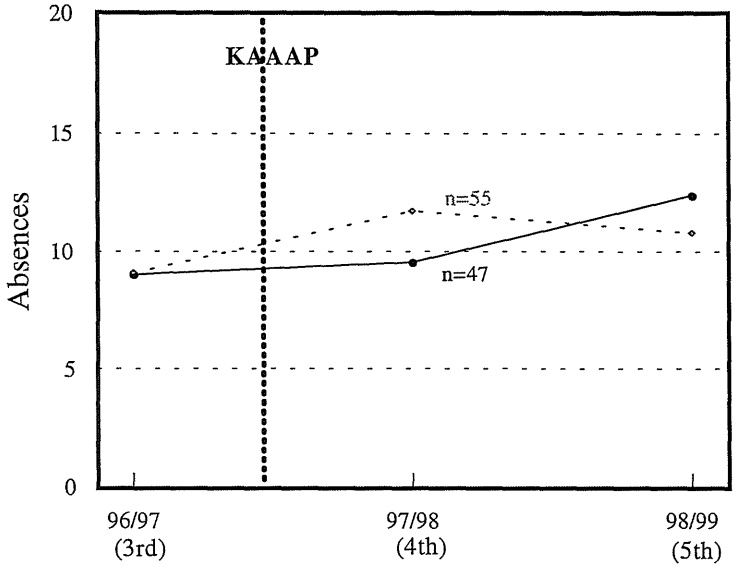


Note: Left portion is ITBS and right portion is MAT7.
MAT7 does not have a language component

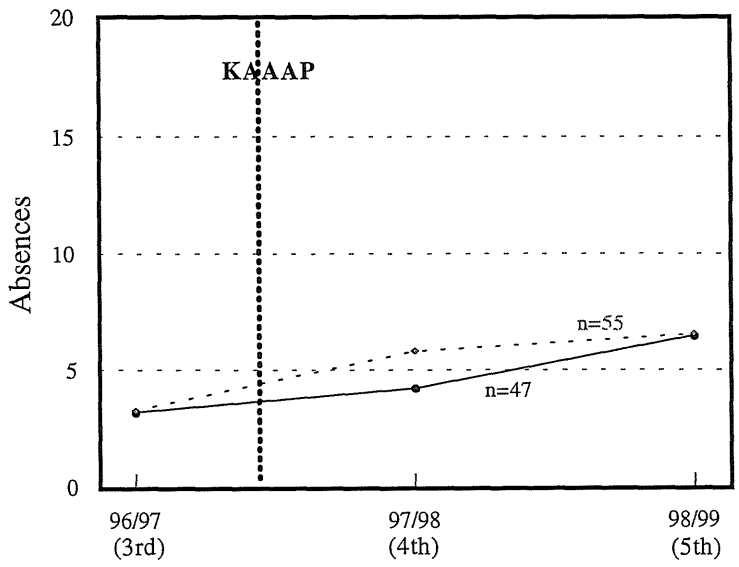
KAAAP Control

1998 Cohort Outcomes

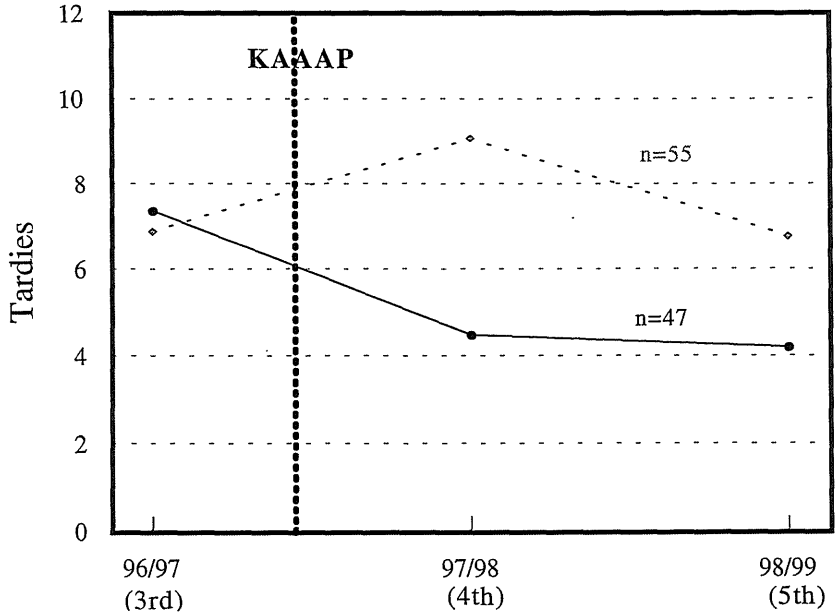
Average Number of Total Absences

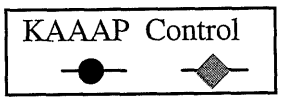


Average Number of Unexcused Absences



Average Number of Tardies

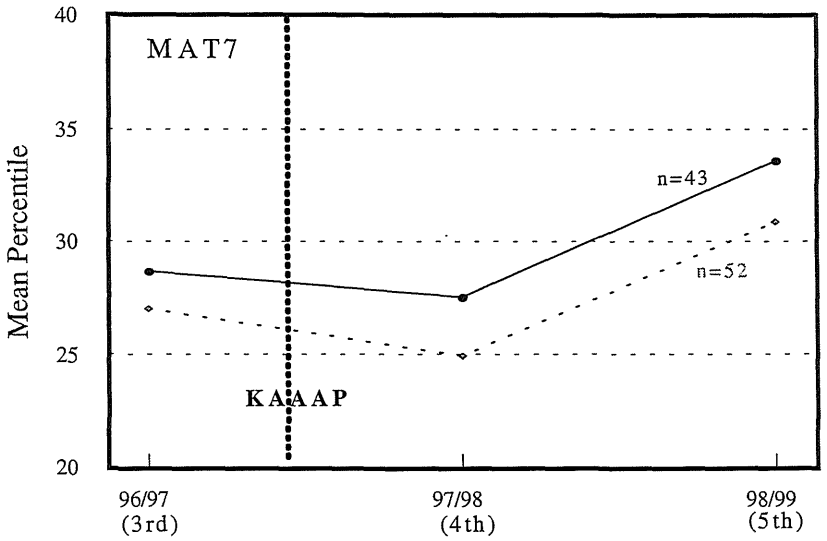




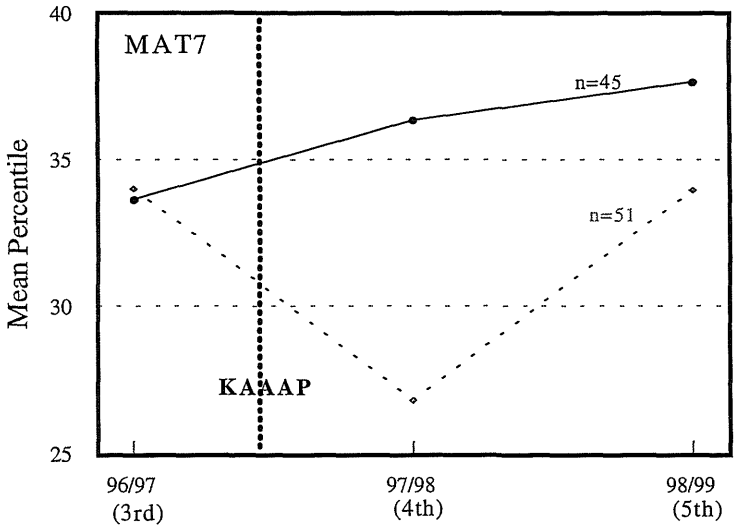
1998 Cohort Outcomes

Standardized Test Results

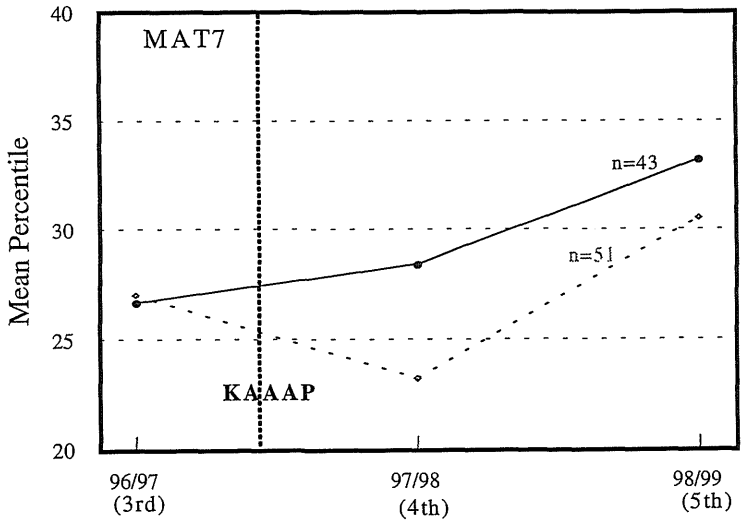
Reading



Math



Total Battery

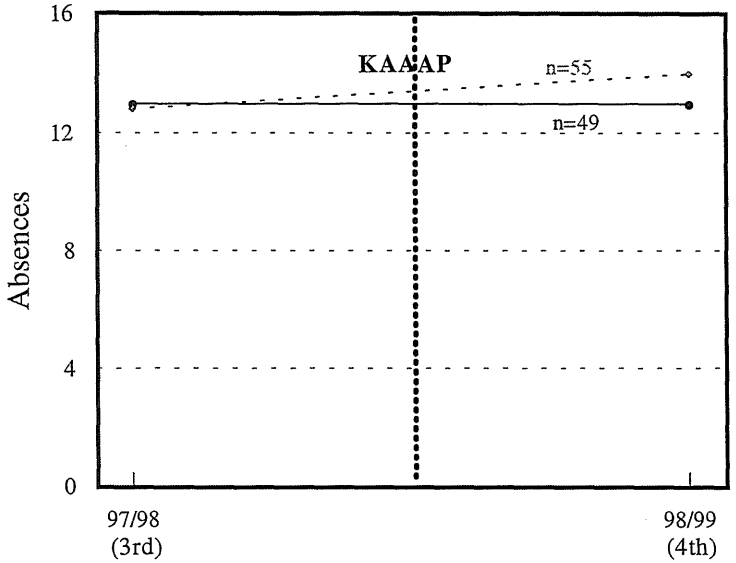


Note: Left portion is ITBS and right portion is MAT7.
MAT7 does not have a language component.

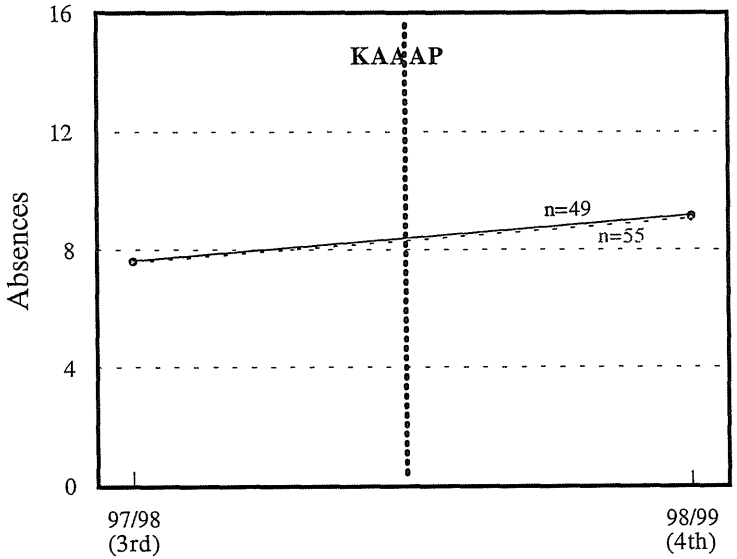
KAAAP Control

1999 Cohort Outcomes

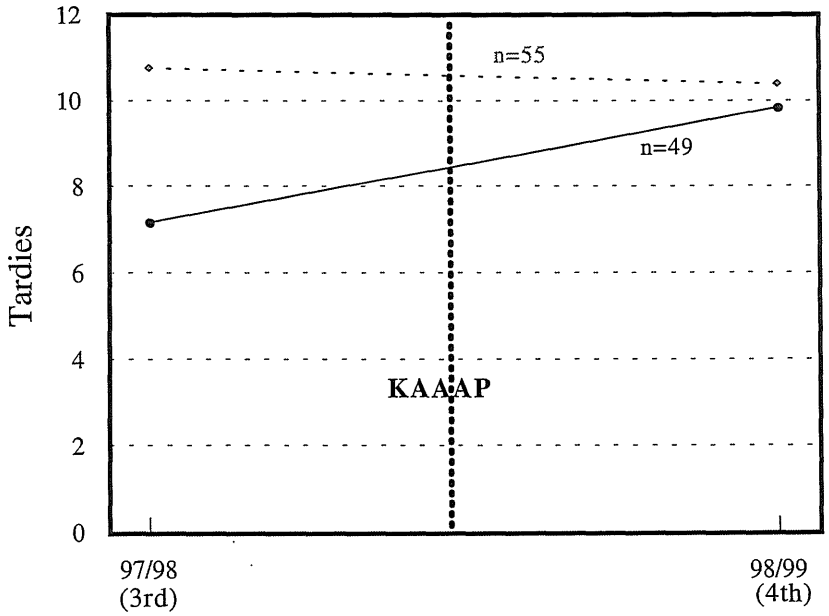
Average Number of Total Absences

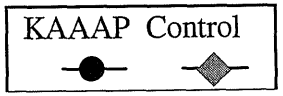


Average Number of Unexcused Absences



Average Number of Tardies

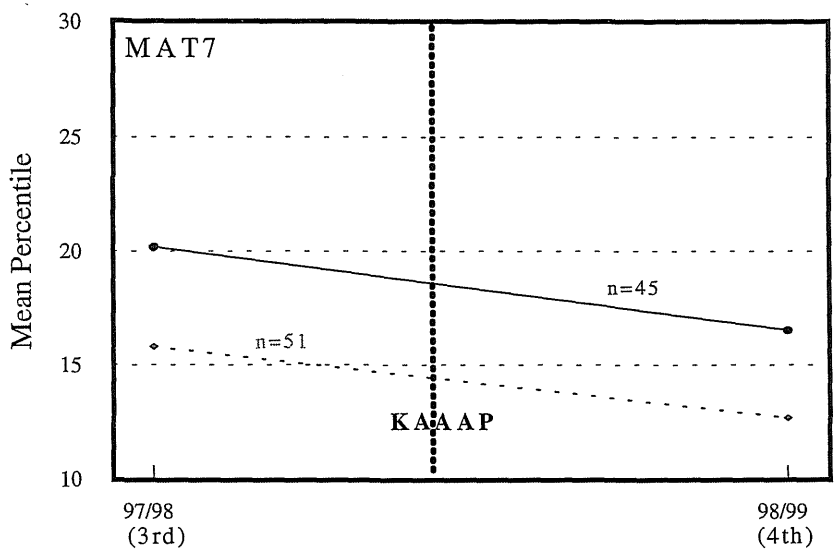




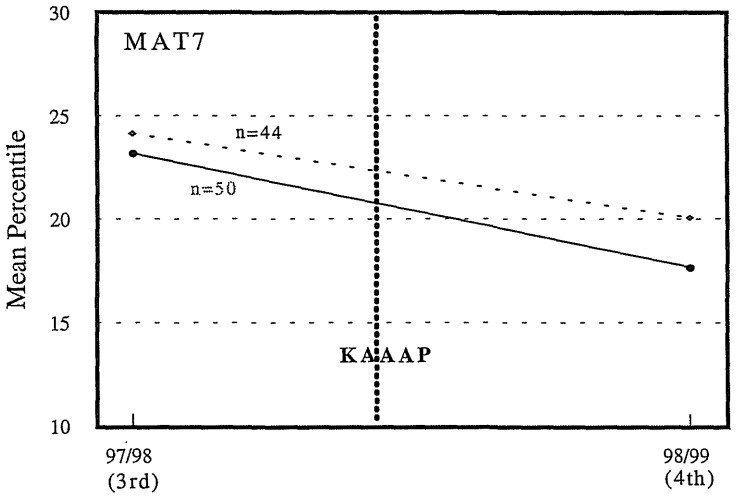
1999 Cohort Outcomes

Standardized Test Results

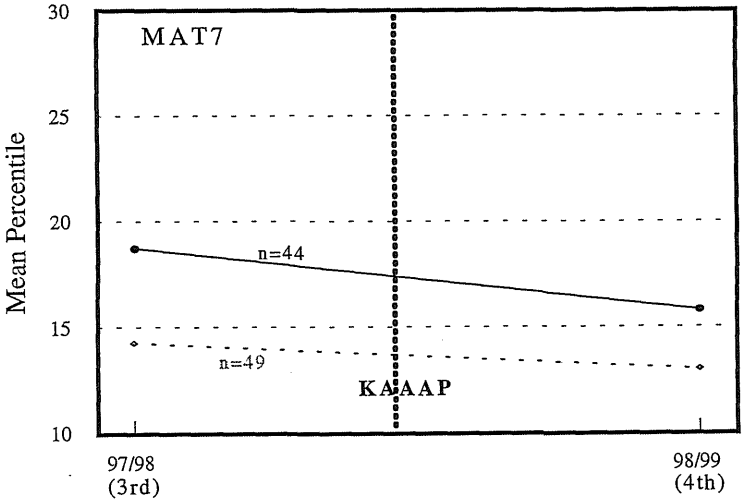
Reading



Math



Total Battery



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KAAAP Control